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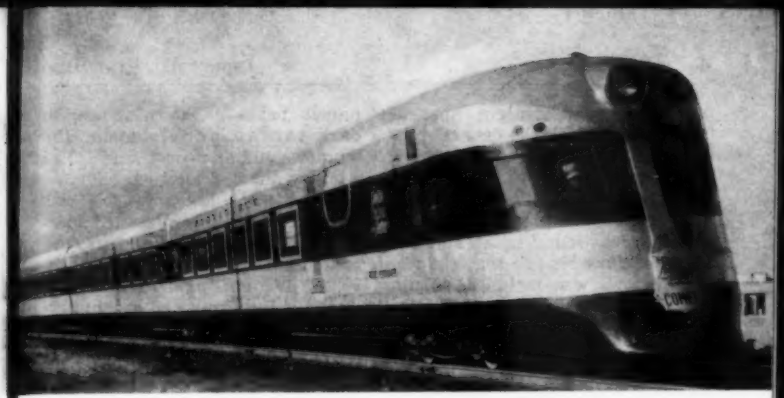


Finishing

The New Haven Comet

For Streamline Effect, Cheerful Color and Durability

by Blaine Stubblefield

THE New York, New Haven & Hartford Railroad Company wanted their new streamlined train, the "Comet," to be the last word in streamlining; they wanted it to conform to the modern trend toward light, airy cheerfulness and simplicity; and they wanted the finish to be durable. A nationally-known manufacturer of paints and finishing materials cooperated with Goodyear Zeppelin and the New Haven staff to get the desired results.

The color scheme utilizes the natural tone of the metal car bodies. Upper and lower portions are simply protected with clear synthetic chemically-evolved resin varnish, allowing the beautiful engine-turned surface to gleam, offset by two broad bands running the length of the train. A blue band girds the length of the train at window level, and a darker blue band skirts the bottom. The colored bands are pigmented synthetic enamels. The finishes, inside and out, were sprayed and air-dried.

The combination of two shades of blue bands against the natural aluminum and gray, enhances the effect of the streamlined form, giving the observer a definite feeling of speed and power, as suggested by the name "Comet." Horizontal striping makes the train look longer and lower, and emphasizes its lower center of gravity. The roof is in a light shade of gray, which has the optical effect of lightening the top of the structure and lowering the mass near to the ground.

A problem in the Comet design-finish job was to find a way of

reconciling the straight lines of the windows with the general pattern of curves. If the window lines could not be reconciled, they should at least be camouflaged to a point of inconspicuousness. The solution was found in locating the band of dark blue so that the tier of windows was included. Thus, the dark blue line, flowing strongly with the length of the train, dominates the partially obscured window lines by making them a part of a subordinate element in the composition, with very pleasing results.

The interior finish goes farther into color values. Rail car interiors have always tended to follow trends in home interiors. (Every oldster remembers the early cars done up in red plush, magnificent chandeliers with cut-glass dangles, and even the parlor stove.) It is the fashion just now to use a variety of colors in home interiors, but the New Haven train designers concentrated more on the special requirements of trains as such. Too many colors crowded into a limited space might have clashed to the eyes of many people; the designers were striving for maximum restfulness. Therefore, a restrained scheme was adopted, in which, mainly, different shades of the same color were used. An illusion of open space is given by graduating from dark at the base to light at the ceiling. Thus the coloring becomes the most efficient aid to comfortable but adequate lighting, both by day and by night. The ceiling is a "Caen stone" pink-white enamel of medium gloss. The walls are done in shades of tan, ranging from very light at the frieze board behind the baggage rack above the windows, through medium tan on panels between the windows, to dark tan on panels under the windows and on door frames. The heating ducts are brown.

The Comet finishing job was carried out on exact detailed specification as to cleaning surfaces, spotting of putty holes and abrasions, priming, percentage of reductions for spray and brush, drying time, sanding, etc. The materials used include metal cleaning solution, red oxide primer, knifing putty, surfacer and enamel, reducer, clear finishing varnish, truck enamel, railway primer, Caen stone flat headlining, and semi-gloss enamel.

Note by Westinghouse

New Haven's 800-h.p. diesel-electric "Comet" accommodates 160 passengers and is the first to utilize double-end control for aerodynamically designed trains in high speed service. The new 3-car Westinghouse equipped, all-aluminum train, with a 400-h.p. diesel at each end, will make the 44-mile run between Boston and Providence on the New York, New Haven and Hartford Railroad in 44 minutes, reaching a maximum speed of 90-m.p.h. in scheduled service.

The train has a carefully designed air-conditioning system and an excellent method of illumination — all light is directed towards the ceiling which becomes the source of illumination, diffusing the light without glare.

V. J. Dolan Purchases Interest of Associates

Mr. V. J. Dolan, President of V. J. Dolan & Co., Inc., 1830 N. Laramie St., Chicago, Ill., announces that he has contracted to purchase all the stock and interests formerly held by Messrs. J. P. Brown, J. L. Brown and W. V. Michel.

Refrigerator Finishes—I

by A. O. Plambeck
Assistant Technical Director
Roxalin Flexible Lacquer Co.

In this article the author tells just what features are essential to produce a fine finish on the all-metal cabinets of mechanical refrigerators, and explains how to select and apply a practical finish that will satisfactorily meet all of these requirements.

THE FINISHING of a refrigerator serves a two-fold purpose: First, as a protection for the metal or other material used in the fabrication of the cabinet, and to prevent corrosion or deterioration of the structural material. Second, to give a pleasing appearance, which will also be permanent and durable. The refrigerator manufacturer in general desires four important characteristics in the finish which he applies on his cabinets, as follows:

1) An attractive finish to enhance the merchandising sales appeal of the products—to create a greater demand or desire on the part of the public for these refrigerators.

2) Permanence of the finish in order to build up the manufacturer's reputation as a reliable concern.

3) Protection of the materials used in fabrication.

4) Low cost in obtaining the finish, to protect the manufacturer in meeting competition in the industry.

In discussing these four important points I will take up each one in turn.

No. 1—Attractive Finish

One of the practical features in the appearance of any finish is its luster. The present desire is for a high gloss finish to resemble porcelain as closely as possible—since some of the highest priced cabinets have an all porcelain finish. For this reason synthetics and high gloss lacquers are interesting to the refrigerator manufacturer, as they give him the highest and clearest luster of all the systems. However, many other characteristics apparently offset this advantage, and must be kept in mind when considering the finish as a whole.

Color is another important consideration in appearance. Most manufacturers have their own color standards. These range from a pure white to a blue white or gray white to imitate the appearance of porcelain. Other manufacturers feel that a creamy white gives the most pleasing appearance. Still other manufacturers use pastel shades of green, yel-

low, gray and even black in finishing some of their products, so the finished refrigerator will fit in with the color scheme of the kitchen. These various shades of color present no problem in the formulation or manufacture of the finish, as the same basic material is used; and is shaded or tinted to match the manufacturer's color standard.

Smoothness is also a great factor in appearance. This characteristic is governed by the formulation of the material. A well balanced solvent blend will cause the finish to flow out to uniform thickness and still set up fast enough to prevent sags. Proper manipulation of the spray gun by the operator is essential to produce a smooth, even coating with any material. Coverage is important to the manufacturer, both from the standpoint of appearance and economy of finishing. The coverage must be great enough to give a uniform cast of color over the entire case . . . so that such parts as may be sprayed at different intervals of time will be exactly the same color and luster when the entire box is assembled.

Uniformity of the finish is essential . . . no dark spots showing through . . . no print marks or any other marks. Uniformity is obtained only through care in applying the finish, proper preparation of the metal, and the use of suitable undercoats and finishing materials. Close checking of various shipments and batches of material, as supplied by the finish manufacturer, is essential.

No. 2—Durable Finish

Manufacturers of refrigerators must strive not only for a good initial appearance, but must look further to the durability of the finish, which provides permanence of appearance. This is of particular interest to the customer. The finish must present maximum resistance to conditions to which a refrigerator is usually subjected. It must have permanence of color, must not chalk, check, craze, scratch or blister, and must be resistant to materials and conditions with which it comes in contact during ordinary usage.

Any one of several conditions may affect the color of the finish. When the refrigerator is packed it is usually wrapped in kraft paper and placed in a wooden box. This may be stored in a damp warehouse for some time, and the finish must resist the effects of the moisture and chemicals which may be in the paper, and any gases which may be present in the storage place.

Refrigerator finishes must resist the effects of refrigerant gases. Even a very small loss of gas during storage may produce a thoroughly concentrated atmosphere and might cause discoloration of the finish. Also, during transportation, leakage may cause discoloration, and the finish must be designed to resist this effect.

Edible greases and oils, fruit acids and household gases must not affect the color of the finish. Grease and oils usually have a softening effect, and will yellow and smudge some finishes. Fruit acids may cause some discoloration of the pigments or affect the vehicle. Household gases may cause slight discoloration.

The finish must resist humidity, as this is an important feature, particularly in the South and along the seacoast. Although there is insulation between the interior or cooling chamber of the box and

the outside there is considerable condensation of moisture on the finish, particularly in humid weather.

The finish must resist sunlight to a certain degree, as cabinets are sometimes exposed to sunlight which may cause checking, cracking or discoloration of the finish unless it is designed to withstand these elements. The finish must be resistant to mild alkalies such as soaps and washing powder, which are often used for cleaning a cabinet in service.

To make sure that the finish will resist ordinary wear and tear, some manufacturers apply an extra coat of finish on the parts subjected to the greatest wear, such as on the door handles and along the edges of the doors.

No. 3—Protection for Cabinet Materials

An important function of the finish is to protect the refrigerator cabinet. Metal parts must be protected from corrosion or rusting; wood parts, if any, must be protected from decay. The finish must be of such a nature that it will inhibit and prevent the spotting and spreading of rust. It must have good adhesion to the surface to do this, and must not be permeable to moisture and air or corrosive fruit acids and gases. If the finish has these characteristics and also resists conditions which tend to affect its outward appearance, it undoubtedly will prove a good protection for the structural materials.

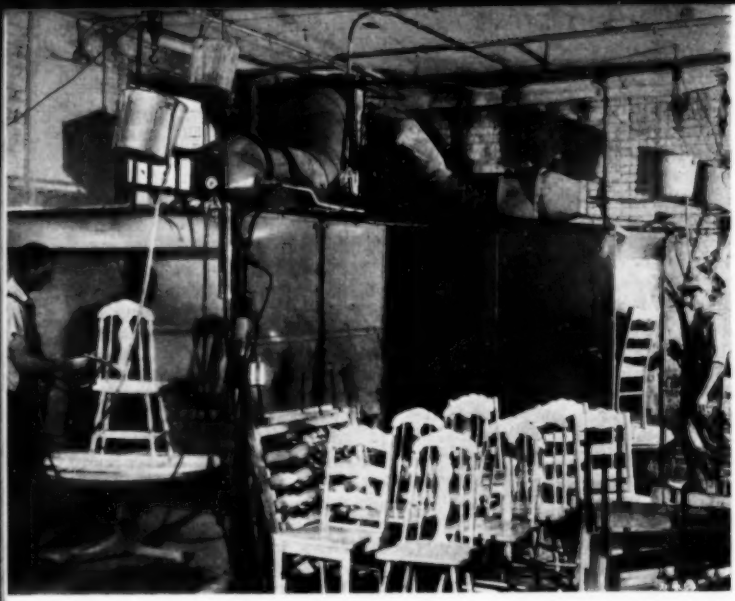
No. 4—Cost of the Finish

The cost of obtaining the desired finish can not be figured entirely from the price per gallon of finishing materials. It can only be figured from the cost per unit of the finished product. Many factors entering into the final cost are much greater than the cost of the finishing materials, so the cost per gallon should not be the only basis for calculation; other factors must be considered.

One major factor in the cost is the time required to finish a box. If two coats of one finishing material give the same satisfactory finish as four coats of another material, then the first one would cut down the labor cost and overhead to approximately one-half. If the working qualities of a finish are such that it sprays more readily or flows out better, it will speed up production and cut down the cost. If the primer and enamel are clean and have no "seeds" or grit, you can cut down on the number of men and amount of time required in the sanding operation, and thus materially reduce the cost.

In determining the cost, the covering capacity or the number of square feet coverage per gallon is an important factor, and is best determined by running 20 to 25 cabinets and keeping a close check of the exact amount of material required to secure a satisfactory finish. The best way to determine the finishing cost is to make a production run of the material in the plant over an extended period of time—say, several days or a week—which will give a good indication of the labor cost in producing the finish, keeping close check of the number of cabinets finished and the number of hours of work put in by each man connected with the finishing process.

In Part II, the author takes up the testing of finishing materials for use on refrigerator cabinets.



Spraying from gravity-feed containers. Photograph, courtesy Paasche Airbrush Co.

Better Spraying Results

by T. R. Nall
Practical and Seasoned
Expert in Spray Finishing

WHEN PLANNING to tool up a factory department for first class spray finishing, one of the first things to consider is the interior of the finishing room itself. Walls and ceiling should be carefully painted, either in white or aluminum paint; and be sure the paint or aluminum finish is of good quality so it will not deteriorate prematurely and begin to flake off. This is especially important if the plant is near a railroad, or if the finishing room is above or below a floor having heavy machinery which may jar the building and cause cheap paint to loosen and fall on finished work. Whether the floor is concrete or wood, it should be kept oiled to "lay the dust." I suggest using filtering oil — like that used in air filters.

Spray booths should be placed where there is plenty of daylight. A dark spray booth causes poor workmanship. For dark days or nights the booth should be

equipped with flood lights directed toward the interior from each side, from the bottom, and from the top, to eliminate shadows on the work while spraying.

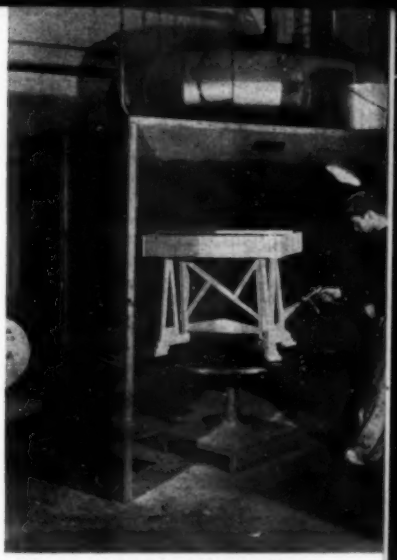
Keep Everything Clean

Keep the exhaust fans clean and in good running order so they will remove all fumes from the finishing department. This is necessary to produce clean work and to avoid endangering the spray operator's health. If turn-tables and other apparatus used in booths are made of iron or sheet metal, they can be easily cleaned each night by placing them in a large tank of some caustic solution. This will provide operators with clean equipment at the beginning of each day's work. Accumulations of paint, varnish, or lacquer on the floor in and around the booth should be cleaned up daily. For this work I suggest using a bronze scraper; then follow with a cotton mop wet with lacquer reducer.

The interior sides and top of every spray booth should be covered with some temporary coating that will catch waste spray; then the material that accumulates on the sides and top of the booth can be easily stripped off every day, or once or twice a week. This waste material is difficult to remove when it attaches itself directly to the metal sides and top of the booth.

Clean Hose Connections and Spray Guns

It is also necessary to keep the hose connections clean. This can be done by dropping the ends of the fittings into lacquer reducer at the end of each day's work. If this is done, hose connections will always fit properly . . . this prevents leakage around connections, and prevents dirt from accumulating. Also, take lacquer reducer on a rag and wipe up and down outside of hose to clean it.



When spraying a piece like this, the operator must work carefully to avoid "over shot" on the surfaces being finished. Photograph, courtesy Paasche Airbrush Co.

Probably you heard of operators dropping their spray guns into lacquer reducer or varnish remover and allowing them to remain there over night. I have operated spray guns for over ten years and have never left a gun soak in anything over night. Believe it or not, soaking over night often causes certain materials used in the gun to harden. If the spray gun is cleaned as soon as the operator is done with his work, it can be cleaned more easily and more quickly; then it is in first class condition for the next day's work.

One of the important things every spray operator should know

is what distance the gun should be held from the surfaces being sprayed. Different materials require different distances—varnish from 14 to 18-in.; lacquer, 12 to 14-in.; Synthetic enamels, 20 to 25-in., that is, according to my own personal experience.

EDITOR'S NOTE: These distances are greater than most of the spray gun manufacturers recommend. In this connection, one prominent manufacturer says:

"We recommend holding the nozzle of the gun 8, 10 and 12-in. from the surface being sprayed. Holding it farther away creates excess vapor, increases loss of material and, with certain materials, drives out too much solvent. Stay as close as consistent with the speed, quality and economy desired. These recommendations apply to production finish. Certain operations, such as blending, misting and the like are sometimes performed by holding the gun at a greater distance from the work."

Spraying Synthetic Enamels

Synthetic enamels must be sprayed differently from the usual run of finishing materials. Many synthetic enamels are compounded to serve as a one-coat finish, and great care must be taken when spraying them. Best results are obtained by fogging or misting a thin coat over the entire surface, and allowing five or ten minutes for this coat to set up; then spray on a full heavy coat.

Some synthetic colors must be sprayed differently than others; by this I mean that some colors will run or sag quicker than others . . . and the spray operator must know how to spray each color. Synthetic refrigerator enamels spray well from a pressure tank in large production or from a gravity-feed tank in small production . . . or from a cup gun in small laboratory work or touch-up work. The flow of material from the nozzle of the gun should be as wide as possible. Hold the gun back about 24-in. from the work; this allows some of the liquid in the enamel to evaporate before the enamel comes into contact with the object being sprayed. By this method you can get more enamel on the refrigerator without danger of it sagging, and it has a higher luster after it is baked.

EDITOR'S NOTE: There is now available, for use on spray guns, an air cap which takes care of this thinner evaporation at ordinary working ranges. In other words, a spray gun equipped with one of these air caps would not need to be held so far back as the author has just recommended.

Spraying Lacquers

It is important that lacquers be reduced to the right consistency to obtain satisfactory results. If lacquer is too heavy it does not flow out properly; it has a dead appearance; has what is called "over shot." To obtain a first class finish with clear lacquers and lacquer enamels, reduce them exactly as recommended by the manufacturer. Sometimes lacquer has to be reduced more than is recommended, as the company's samples are small and one has to work this out in production to obtain correct results.

When spraying lacquer the gun should be held 12 to 14-in. from the work. Spray on a thoroughly wet coat. If you are spraying a chair, for instance, spray all the legs first; then the back of the chair, starting at the top front of the chair and coming down all the way, spraying the seat as you finish up. This method prevents dust and "over shot," and makes a clear smooth finish. Of course, if the chair were finished in clear lacquer and then rubbed, this dust or "over shot" would not show after rubbing. However, if the

chair isn't going to be rubbed, it should be sprayed as described above.

Spraying Varnish

Spraying varnish is much easier than spraying synthetics or lacquer finishes. Varnish flows better than lacquer. The gun can be held farther away from the article being sprayed, and you will always get a wet coat. If the finishing room is warm, varnish will always flow out. Most varnishes do not have to be reduced, as they are furnished in the right consistency by the manufacturer. It is necessary to get a thoroughly wet, even coat on the surface when spraying varnish. This eliminates sagging and fatty edges, and gives perfect results when rubbed.

Finishing Room Fires

WHAT MIGHT have been a disastrous fire was narrowly averted when an unexpected blaze suddenly flared up in the finishing room of a Michigan furniture factory. In this plant the foreman is very strict about cleanliness. No waste materials, dust, used cloths, or any other refuse, are allowed to lay on benches or the floor, or remain long in the finishing department. Waste cans are emptied at least once a day.

As in nearly every finishing room where any oil glazing or antiquing is done, some brushes are used for blending and the equalizing of color to produce antique effects. Frequently these brushes become "loaded" and need cleaning. As this is an oil-base material, naphtha is probably the quickest and most economical solvent to use for cleaning the brushes.

While one of the men was washing his brush in a tin pail containing regular V&PM naphtha, a sudden blast ignited his hands and arms which were wet with the solvent. Flames leaked to his apron and rapidly began to spread over his clothing. A fellow workman took in the situation at a glance. As the flames spread higher about the unfortunate man's face he walked slowly backward with flaming arms outstretched, throwing his head backwards to avoid inhaling the flames, which would have been fatal. The nearest workman tore the flaming apron from him and flung it aside, being able to quickly extinguish the flames on the victim. But the flaming apron fell near a waste can and ignited the contents. By this time other members of the crew had obtained the ever-ready, hand, fire extinguishers. Two brands of extinguishers were at hand. Two 2½-gallon extinguishers were used with little or no effect on the fire in the waste can and the pail of cleaning naphtha. However, a third extinguisher quickly put out both fires.

The foreman was on the floor below at the time, but hearing his men running about he rushed upstairs, found the fire put out and realized that his strict rules for cleanliness and safety had paid him and his company high dividends.

The fire victim's arms were badly burned. First aid was given and a doctor was called. The heat had bitten in deeply enough to cause the man's arms to crack open—not unlike a "weenie" that has been roasted over an open fire at the familiar "weenie roast."

The exact origin of this fire is uncertain. We all know it is almost if not entirely impossible to cause two pieces of tin (or tin-coated metal) to throw off a spark, which is what occurs when striking a tin brush ferrule against the tinned container. Possiby the naphtha was ignited by a spark of static electricity produced by rubbing the bristles of the brush while washing it. If so, the necessary practices in a finishing room are more dangerous than is ordinarily surmised.

The failure of the first two extinguishers to put out the flames is another important matter to consider. Apparently the contents of the first two extinguishers were not of the correct chemical composition to use in fighting a naphtha fire. Our fire underwriters and state inspectors should have checked this. I have tested similar extinguishers on a fire built of lacquer scrapings from a spray booth, and a bit of lacquer thinner. The results were decidedly unsatisfactory. The fire continued to burn fiercely after the contents of the 2½-gallon extinguisher had been spent upon it.—GARRETT F. HUIZENGA.

Editor's Note—Industrial Finishing solicits and pays for true stories of actual finishing room fires. The chief points to cover in each story are: 1) What conditions prevailed before the fire; 2) What rules or regulations, if any, were observed; 3) What fire-prevention or fire-fighting equipment was available; 4) What started the fire; 5) How was it put out; 6) What damage done.

J. B. Bond Heads Berry Bros.

Election of J. B. Bond as executive vice president and general manager of Berry Bros., Detroit, Mich., following the resignation of T. J. Campbell, former president, was announced last month at a meeting of the board of directors.

Mr. Bond was formerly assistant general manager and comptroller of Berry Brothers. His wide range of experience in that capacity well qualifies him to meet his new duties.

Mr. J. B. Bond now Executive Vice President & General Manager of Berry Brothers, Detroit, Mich.

With this one exception, the present management of Berry Brothers remains unchanged. Thomas Berry Colby continues as vice president in charge of aviation sales, and Fred L. Colby as secretary and treasurer. C. L. Forgey remains general sales manager and director of advertising.

Confidence in the future was voiced by Mr. Bond at this same meeting. "Sales of this company show a marked increase for 1935," he stated. "With business on a firmer basis and the building trade picking up generally, we expect 1936 to mark a definite return to a more stable prosperity in the paint industry."

This article on japanning, as carried on at the plant of the Graham Paige Motor Corp., especially features a process of finish drying the work with gas torches as it leaves the washing machine, prior to entering the japanning ovens. Also economies effected by changing the oven heaters from oil to gas fuel.

Fig. 1—Burning off fenders with torch.

Cleaning and Bake-Finishing

Automotive Parts

by J. B. Nealey
American Gas Association

CLEANING fenders and other automotive parts, preparatory to the application of primer and finishing coats, usually includes washing with chemical cleaner, rinsing with hot water, and drying. In large automotive factories this drying takes place in an oven while the parts travel through, suspended from a traveling conveyor. A burn-off with gas-fired torches held by workmen is the next operation in some factories. The first company to use this method was the Graham Paige Motors Corp., Detroit, Mich., but other companies have since adopted it because of its time and labor savings advantages. This method is effective and economical; it reduces the handling of parts and does away with the usual burn-off oven.

As parts emerge from the drying oven they continue forward, still suspended from an overhead conveyor chain. They travel past workmen who hold gas-fired torches from which huge flames are directed, as shown in Fig. 1,

to burn off any remaining dirt or moisture. Each of these torches is made up of one or more nozzles supplied by rubber hose fuel supply lines and compressed air. Gas is the fuel utilized. The number of nozzles used per torch is varied from one to four to make the size of the resulting flame suitable for the work in hand. Each nozzle has two hose, one for gas and one for compressed air. Air is supplied at 100-lbs. pressure and gas at 12-oz.

The parts thus treated move along on a single-chain overhead conveyor, but, after the tack-off, they are transferred to another conveyor that carries them through the japan oven. This conveyor is of the double chain and rod type. The oven is of the "A" type, and is in two sections in tandem for 2-coat work. A 4-coat finish is given, the work being put through twice, with a sanding operation in between, see Fig. 2. The two ovens, together with dip tanks, drain boards and other accessories, form a continuous automatic unit.

An important feature of these ovens, also originating in the Graham factory, is a system of viscosity and temperature regulation. It automatically maintains the enamel at the correct viscosity and temperature, recovers all drippings, and provides continuous filtration to insure clean enamel, thus eliminating wastage of material. Each oven is 12½-ft. wide and has 6½-ft. of head room in the "legs." The "legs" of the "A" are 34-ft. in length while the horizontal sections of the ovens are 12-ft. and 15-ft. respectively. A tank of japan is in front of and below each oven, the conveyor dipping the work into the tank as it passes—doing it automatically.

The oven units are built of light steel frames to which is attached standard sheet steel panels. These are insulated to a thickness of 6-in. throughout the heat zone, and 3-in. in the lower half of the legs. The conveyor is of the two-chain and horizontal bar type, as shown in Fig. 3. It is 11-ft. in width and the 1½-in. bars are spaced 1-ft. apart. This conveyor has a weight of 53-lbs. per linear foot. When operated at its customary speed of 36-in. per minute, 6,890-lbs. of conveyor enters the oven every hour. In other words, this much must be heated hourly in addition to the work being sent through.

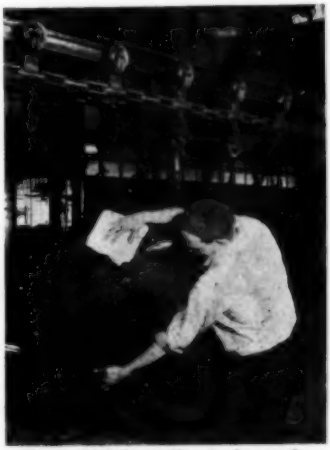


Fig. 2—Lightly sanding fenders as they hang from overhead chain, sanding between coats to improve the final finish.

This oven is heated by separate gas-fired heaters (one for each section) which set in two fireproof rooms located below the ovens, see Fig. 4. These heaters are of the barrel type . . . insulated sheet metal . . . with a gas burner firing into one end and a fan lo-

M&WCo 1876

Are You Blocking Traffic in Your Finishing Room?

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cated at the other. This fan draws hot air out and forces it into the oven. The temperature is maintained mechanically with an automatic temperature control consisting of a thermostat and motor-operated valve in the gas supply line to the burner.

A temperature of 490°F. is maintained in the high heat zone of each oven. Work in process is in the ovens from 35 to 40 minutes, and for about 40% of this time it is in the high heat zones. Originally these ovens were heated by indirect air heaters fired with oil. They were located in the rooms now occupied by the gas-fired heaters and when they were replaced by the gas units, the latter were coupled to the oven supply and delivery ducts already in place. No other changes were made in this equipment.

Considerable economy of operation and maintenance costs resulted after changing from oil to gas heat. Formerly it was necessary to light the oil heaters as early in the day as three or four o'clock in the morning in order to bring the ovens up to heat by 7 o'clock. After the installation of the gas heaters it soon developed that the heaters could be lighted at the same time production started (7 a. m.); and the ovens would be up to correct temperature by the time the work started to enter the first oven. Experiments were then conducted to improve economy by reducing the air supply to the heaters. It was found that the air washers and fans used with the oil heaters were unnecessary, so they were removed.

The air is now drawn through

Fig. 3—Fenders hanging from chain and rod conveyor, moving from dip tanks to ovens.

You Can't Start Too Soon to TACKLE the Job

of improving the finish of your product because it is often the determining factor between "sale" and "no sale."

The finish of your product is first to confront your customers . . . it, to a great extent, influences first impressions . . . and first impressions, once formulated, are difficult indeed to change.

The finish of your product has much to do with the future of your product. Let's analyze it . . . let's see if we can put more sales-appeal into it. That's what our creative studio is for . . . to help you solve finishing problems. Write for details. There will be no obligation whatever.

"No tampering with quality"

Rockford Varnish Co.

ROCKFORD, ILLINOIS

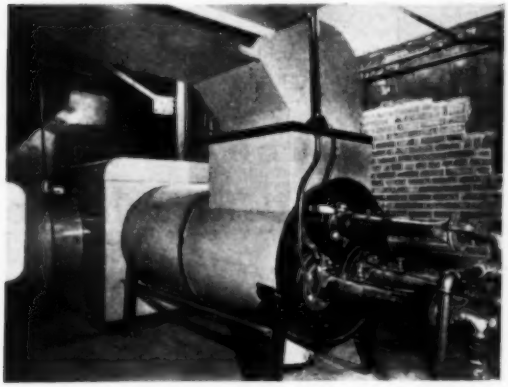


Fig. 4—Close-up of one of the gas-fired heaters which supply heat to the ovens. The heated air is blown to the ovens by efficient fans.

cloth filters only. The filters are equipped with sliding dampers which are adjusted so that the air temperature at the outlet of the heaters is about 700°F. with the burners wide open. The average hourly gas consumption has been reduced approximately 25% by these adjustments. The change from oil to gas also resulted in a considerable lowering of fuel costs.

New Automobile Colors, Designs at French Auto Show

A trend to brighter color is noticeable in the annual French Automobile Salon, which was held in Paris early last month, according to Philip H. Chase, color specialist of the Duco Color Advisory Service. The French Automobile Salon is the first of the large showings by manufacturers this fall.

Mr. Chase reports that black, which has been in favor throughout the depression, accounts for about 20% of the cars in the Paris Salon. The other 80% are in lighter colors, with blue being the most popular. Gray is next, and this is followed by yellowish shades, maroon, green, biege, red, and brown. There has been an increase in gun metal effects, and about 15 cars are finished in aluminum or bronze effects.

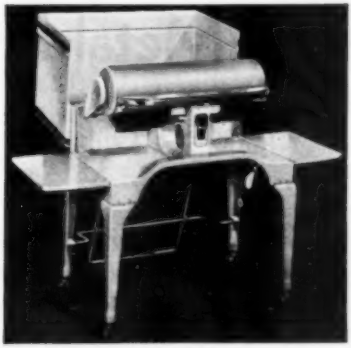
The main features of the show, in regard to treatment of color, consist in an emphasis on composite colors and simplicity in decoration schemes. Most of the maroons are so reddish that it is difficult to separate them from red. The grayish greens seem to be popular. Other features in the treatment of the finish are that there is practically no striping on the louvers, which are mostly of the horizontal or shutter type, and that belt moulding is less used than previously.

The proportion of black fenders is 35%. The colors of the other fenders follow that of the car. Wire wheels are about 22% of the whole, and disc wheels about 17%; various modified types of artillery wheels account for the balance. Aerodynamic principles are maintained without exaggeration and with an apparent effort to achieve more comfort.

The use of leather and lacquered fabrics for upholstery amounts to about 42% of the whole. This is an increase over last year, and the colors of the materials in these fabrics show a far greater range of shades than in other upholstery materials. The cloth upholstery is used mostly in gray and fawn shades, but sometimes in plain wine red, or blue or green to match the color of the car. Fancy woolen cloth with design, as well as pile fabrics, show very little change over last year.

Chemical Solvents Sell Alcohol

A card from Chemical Solvents, Inc., 11 Park Place, New York, N. Y., announces the fact that they have been appointed as sole distributors for a large producer of completely denatured alcohol.



IRONRITE IRONER

DESIGNED RITE ★ FINISHED RITE
IRONS RITE ★ MADE RITE

MADE OF THE BEST MATERIALS. BUILT TO LAST AND TO "IRONRITE." PROTECTED WITH:

BOXX Primer Surfacer (baked)
Ironrite Green Enamel (baked)
White Synthetic Enamel (baked)

● Baking equipment and baked finishes insure the utmost in durability, resistance to marring and long wear. The "Ironrite" organization insists on quality. In Berry Brothers' finishing materials they have found products to satisfy their demand for a long life, enduring finish.

Do you need a primer that will stick even though applied over grease? Do you need enamels that won't chip? Do you need a white that stays white under heat?

If you require air drying or baking materials, investigate the products Berry Brothers have to offer.

BERRY BROTHERS

VARNISHES · ENAMELS · LACQUERS · PAINTS
DETROIT, MICH. · WALKERVILLE, ONT.

Dipping Metal Primer

by M. M. Miller

What we learned about equipment, materials and methods, after some experience in dipping the prime coats of metal refrigerator cabinets.

IN THE FINISHING of refrigerators we formerly applied our baking primer by spraying. Eventually it became necessary to increase our production to a point where the spray booths we had were inadequate to take care of our production.

In looking around for some means of helping ourselves we decided we would start to dip the primer, thus releasing this operation from the spray booths and make them available for further production on finished coats. It also looked to us to be very economical from a material and labor standpoint. Without going into a lot of detail on how we successively ran across difficulties and what we did to overcome them, I will attempt to give in this article some of the points that must be taken into consideration.

Our dipping equipment included a tank into which all the parts were hand dipped and then hung up on racks over a drain-board, which took care of returning the drippings to the tank.

The space required must be large enough to handle sufficient work to allow for complete draining of the material, and at the same time get out the production required. Our first fault was in having too small a drainboard and insufficient racks, and then spending most of the day waiting for the material to stop dripping.

The racks must be directly over the drainboard, and spaced in such a way that the coated parts will not touch; also the parts must be accessible to the workmen. The drainboard must have enough slope for the material to drain back into the tank. A slow draining board rapidly fills up with drying paint and causes considerable waste. At the foot of the drainboard, before the drippings re-enter the tank, there should be installed a strainer to strain this material—this strainer to be removable so that it may be left in paint thinners over night to keep it clean.

The dip tank should be large enough to handle all of the work, and arrangements should be made so it can be quickly emptied for straining or other purposes.

We arrange this by having a pipe extend from the bottom of the tank through the floor below;

"A rugged, durable finish, porcelain-like in appearance, and in a one hour bake."

That's what you'll get with Clix, the new Hilo Quick Baking Synthetic, maximum surface hardness in minimum baking time.

Clix has excellent adherence to wood and metal. May be applied by brushing, spraying or dipping.

Available in many vivid, brilliant colors. Special colors made on quantity orders.

Try a sample of Clix, see its porcelain-like surface, note its toughness and adherence. It's an astonishing improvement over many types of coatings — you'll like it.

HILO VARNISH CORPORATION

HILO

70 Years Experience in "Better-The-Finish"
42-60 Stewart Ave. Brooklyn, N. Y.
Chicago — — Boston — — Philadelphia

Varnishes Enamels Japans Lacquers

and we merely empty the tank every few days into a can on a truck, after which the can is carried back on the elevator to the floor above where the contents are strained and placed in the tank.

Our Viscosity Test

In dipping material of this sort it can be applied as heavily as will not cause runs when draining. Proper thinning proportions were arrived at after testing, and with these proper proportions a viscosity test was made. Daily tests were then made so as to maintain the proper viscosity. The viscosity test was quite simple. We used a hollow machined cylinder having a small hole in the bottom. The cylinder was filled with paint to the top, with a finger held over the hole. Using a watch as a timer, the finger was removed and the paint was allowed to run out of the cylinder into a graduated glass container. When the paint in the container rose to a certain point the time was taken. In our case we found that it required 25 to 28 seconds for this to occur. This then was the measure of the viscosity of this material. If the paint ran out in less than this time it was too thin, and if it took any longer it was too thick.

Dust in Air; Runs, Fills

Another item to consider in a dip process is the matter of dust in the air. The work will drain for a period of 10 to 30 minutes, and during this time it will pick up considerable dust. Provisions must be made to reduce this nuisance. A hinged cover for the dip tank, which should be kept closed whenever not in use, will be helpful.

In many cases some of the work, due to its fabrication, will cause runs or filling up, which have to be removed. We found that a small brush is very handy, as is also a rubber syringe with the hole enlarged. This syringe is very good to remove excess paint from crevices or pockets.

With the exception of loading the materials on the truck, all matters have been discussed. All in all we find that dipping has worked out economically, but that it is not as economical as would seem on the face of it, unless all of the above conditions given can be taken care of satisfactorily.

Binks Engineering Service for Ceramic Plants

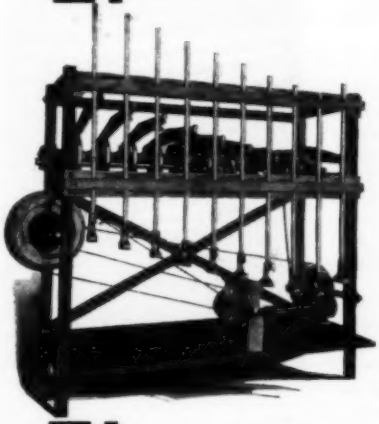
Ceramic plants, anxious to modernize their finishing room layouts and receive suggestions on the latest methods of cost reduction and quantity production, will welcome the announcement made by the Binks Mfg. Co., 3114 Carroll Avenue, Chicago, of the formation of a new Ceramic Engineering Service Department for the benefit of present and prospective customers.

The new department offers its engineering service to ceramic plants throughout the country to render help and suggestions not only on spray equipment, but on all finishing room problems such as spray conveyor systems, overhead conveyor systems, ovens, brushing tables and dust-collecting equipment, automatic finishing equipment, water wash reclaiming spray booths, air conditioning of finishing rooms, etc.

The personnel of the new department includes engineers with years of practical experience in this line and a working knowledge of the methods used in many of the country's largest ceramic plants. Not only are these men skilled in spray equipment, but are familiar with the entire finishing room process and are prepared to give customers the benefit of their experience along these lines.

The formation of this new department is the result of a company policy to offer the services of engineers who are not only experts in spray equipment but in all finishing room problems as well. Ceramic plants are invited to make use of this new department for free consultation without obligation of any kind.

Dip Finishing More Economical and the Smith Machine Does the Work



25,000 to 100,000 a Day

Finish Today—Ship Tomorrow

All kinds of wood handles, toys, wire and metal items at the rate of from 25,000 to 100,000 pieces per day.

From coast to coast, in Canada and all foreign countries, you'll find Smith Dipping Machines doing just that. Kitchen utensil handles of every description and other items too numerous to mention are finished in the Dipping process of the highest quality to be obtained at the least possible cost, doing away with ovens and other systems of drying.

Submit samples for finishing—no charge. Estimates furnished. . . . Write or wire—and descriptive matter will be sent you promptly.

C. W. SMITH, M. E.

40-50 MARKET AVE., N. W.
GRAND RAPIDS, MICHIGAN

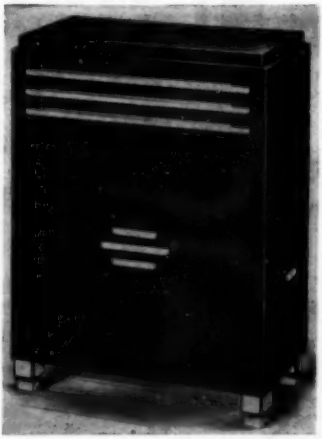
Finishing Console Heaters

by Orrie D. Maal

THIS ARTICLE deals with the metal cleaning and metal finishing operations on high-grade console gas heaters and floor register grilles made of steel —made in a factory located in Beverly Hills, Calif.

These heaters and grilles are finished with material that must stand up under temperatures of 250° to 300°F. So much for utility. In point of appearance, modern architectural demands for unique and outstanding interior decoration require that they be designed and finished to correspond with the interior finishes and furnishings of fine homes. Many ideas originating in connection with super-productions of the great motion picture plants in Hollywood are incorporated in their design and color treatment. Merchandise from this factory is sold in all parts of this country and in many foreign countries.

The cabinets of the console model heaters are made of smooth, cold-rolled, beveled steel from a continuous mill. The legs are cast iron. Before finishing, the pressed-steel cabinets are washed with a special thinner to remove grease and oil, then placed in a bake oven for a few minutes at 400°F. This last operation removes any grease that may be left after the washing. They are then allowed to cool, after which they are ready for painting. Those to be finished in white, or in some very light color, receive a prime coat which is baked at 390°F. for half an hour. When the metal is perfectly smooth, and if this prime coat is properly sprayed and kept clean, no sand-



"Finished in smooth, solid black; horizonal bars and door handles are chromium plated. The cast iron feet are enameled white; chromium plated feet were too expensive.

"No marble finish has been attempted yet, but if the trade demands it we will work this out. These consoles are something very new in the trade, and production has picked up rapidly . . . They are a real improvement over old types of gas heaters, and are being sold in a number of sizes and finishes."

■ ■ ■ ■

SWER, *madam*"

And it is this answer that clinches many a furniture sale

THE CUSTOMER had a question. Not about style, or wood, or color. Or even price. She had all that information.

But she had learned about DUCO. She had a definite feeling that it was a superior finish . . . that it was not only a very beautiful, but also an unusually durable finish. She had determined that her next piece of furniture would have a DUCO finish.

The salesman showed her the DUCO label. The sale was clinched.

The power of that phrase — "Finished with Du Pont DUCO" — to help sales is great indeed. Many furniture manufacturers, as well as makers of various articles used in the home, have proved that DUCO has an established reputation among home owners. And retail dealers see constant evidence of it.

The superior appearance and durability of DUCO are proved easily. We will gladly demonstrate how to use both CLEAR and FLAT DUCO most efficiently and economically. And also help you select the right du Pont Sealer to make the best possible finishing system for your product. Address E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware. In Canada, Canadian Industries, Ltd., West Toronto 9, Canada. In Great Britain, Mobel Chemical Finishes, Ltd., Slough Bucks, England.

NOTE THESE PROPERTIES IN DU PONT DUCO BALANCED LACQUERS

1. Extremely Resistant to Scratching. 2. Print Resistant.
3. Excellent Build. 4. Easy to Rub.
5. Easy to Apply. Good flow with consequent absence of orange peel.
6. Blush Resistant. 7. Outstandingly Durable.

D FINISHES

esday evening, 8:00 p. m., E. S. T., over CBS coast-to-coast network

ing is necessary. However, if dents and scratches appear in the metal, some glazing is required. A special glazing material is used and it does not have to be baked, as the final coat takes care of that.

The final coat at this particular plant is a satin finish. (However, a semi-gloss or high gloss can be applied the same way.) This coat is baked at 260° to 275°F. for two hours.

Cabinets to be finished in brown or black receive only one coat, no prime coat being necessary. This single coat of satin enamel is baked at 225°F. for the first hour; then the heat is increased to 275°F. for the second hour, making a total of two hours.

Now we come to the grained jobs, like walnut, mahogany and oak. The prime coat for these finishes is baked at 390°F. for half an hour. Naturally, this prime coat must be the correct ground color for the particular wood to be imitated. Following the baking of this prime coat, the usual graining is done. Then a coat of high baking varnish is applied and baked for two hours at 250°F.

The procedure for producing Monterey, "dirty white," and kindred finishes, is the same as on the grained jobs, but glazing colors are substituted for graining.

The grilles for floor and wall registers are all finished the same way, with the exception that the primer and varnish coats are dipped instead of being sprayed. This dipping process naturally saves materials as well as labor. Floor-register grilles finished this way have been tested at much higher heats than they will ever have to stand under regular conditions, and the paint showed no discoloration; nor did the varnish turn brown or soften under these severe tests. To my way of thinking, this is an ideal way to finish these articles, especially when so many customers demand their own colors to match furniture, woodwork or tile in the home, and expect the colors to hold up under all conditions.

Is Another Ray Martin

A letter from Ray C. Martin (Consultant on Finishing) whose articles have appeared in past issues of INDUSTRIAL FINISHING, and who has been associated with various finishing material manufacturers, explains that he is not to be confused with the Ray Martin publicized in the advertisement of Stille-Young Corp. in October INDUSTRIAL FINISHING, page 14. Ray C. Martin is now located in Detroit, Mich., 15064 Pinehurst Ave.

Comfo Respirator Approved

Of interest to the various industries where lead dust constitutes a health hazard is the recent announcement by Mine Safety Appliances Co., Pittsburgh, Pa., concerning the additional approval No. 2107 awarded their popular Comfo Respirator by U. S. Bureau of Mines for protection against lead dust. The approval is granted on the basis of special filters developed for the purpose in the MSA Research Laboratories, and the unit retains the lightweight comfort, long filter life and easy-breathing qualities that characterize its design.

A previous Bureau of Mines Approval, No. 2101 AC, covers the Comfo-Respirator equipped with filters for protection against pneumoconiosis-producing, or nuisance dusts, and chromic acid mists. Both types are illustrated and described in a new bulletin, just off the press.

Beware of IMITATIONS

Puritan Silver Paste is the *original* Aluminum Paste for every known use in the Tin Plate Decorating, Casket, Toy, Hardware and Sundry industries. It can be coated, sprayed, brushed or dipped on any surface. Do not accept substitutes or synthetic material. If it cannot be obtained in your vicinity, address Otto A. Both Corp., 50 Hartford st., Boston, Mass.—Adv.

What's New « «

Burnished Finish

The smooth, lustrous, hand-tooled burnished metallic finish, so often used as an essential decorative trimming on expensive picture frames, can now be produced with a sprayed finish, according to Maas & Waldstein Co., 430 Riverside Ave., Newark, N. J.

Some very attractive panels showing the M. & W. burnished finish in silver, gold, bronze, copper and other attractive colors were recently exhibited at the Industrial Materials Exhibition held during October at the Hotel Astor in New York, N. Y. Manufacturers who attended the exhibit showed unusual interest in the finished panels that were on display.

This finish can be applied satisfactorily on wood, metal, composition board, glass and clay products at reasonably low cost and by modern production methods. It is beautiful, durable and easy to apply. According to the Maas & Waldstein Co., it is being used as a decorative finish in several industries.

Respirator Has Double Chemical Cartridge

A new automatic double chemical-cartridge rubber respirator (Dupor No. 10) fitted with two 1-oz. cartridges of activated cocoanut charcoal, is announced by H. S. Cover, 1939 Chippewa, South Bend, Ind. These respirators are designed and made for the protection of men exposed to paint spray, light fumes, vapors, and all kinds of dust. They are reversible and foldable. The face cloth of the respirator is designed to fit tightly about any shape face with complete comfort to the wearer.

The slower speed of the air through the felt filter pads of this "Two-In-One" respirator causes more dust and spray to be caught. The new exhalation valve offers almost no resistance to breathing. It is double, and check valves to the filter chambers are not needed. Either valve port has sufficient capacity, and the one at the bottom takes care of con-

It's reversible, foldable, comfortable.

densed moisture from the breath. Used face cloths and chemical cartridges can be easily and quickly removed and replaced with new ones. Each cartridge is a press fit, and is sealed with a convenient but effective rubber ring on the outside.

Cromodizing Rustproofs Many Steel Products

The American Chemical Paint Co., Ambler, Pa., announces a rustproofing treatment called "Cromodizing," which is adaptable to many steel products, particularly those made of sheet stock which has been pressed into shape. In this new process steel products are dipped in or sprayed

with a solution of cromodine, a proprietary chemical, for one minute. Following this treatment they are rinsed, dried, and then painted in the manner desired. The short Cromodine treatment changes the surface of the steel so that it no longer has the power to rust. The treated surface has a mild "baking" effect on the paint and this action cements the finish to the very grain of the metal. Cromodized steel is smooth and perfectly paint receptive. Finishes applied over it exhibit a splendid luster.

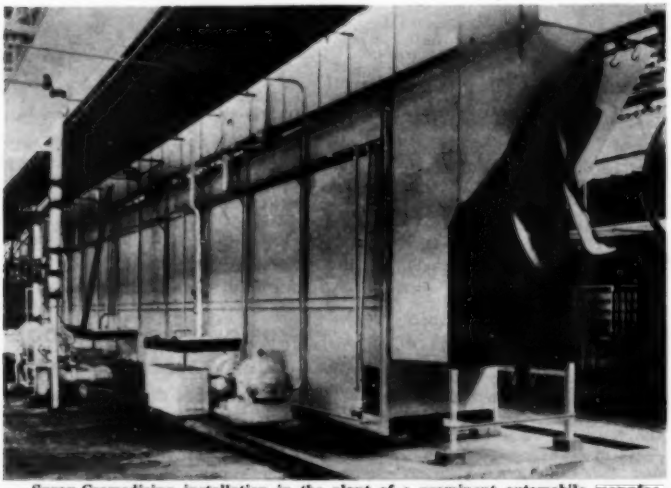
Prominent automobile manufacturers have found this new treatment more than triples the life of the finish on steel parts. They have also discovered that because of the unusual adhesion of paint to cromodized steel, the finish is not broken when the metal is bent or distorted. Tests made by these manufacturers prove that cromodized steel not only resists the corrosive action of the atmosphere, but also the effect of salt to remove ice from roads in winter and of chemicals used to "lay" dust in summer.

In large scale installations, automobile companies find that the process can be entirely supervised by their regular workmen. No unusual equipment is required. Costs for chemicals have not exceeded ten cents per 100-sq.ft. of surface treated.

Rust-Resistant Primer, Finish

Mogul 3-Way Coating is a transparent, gelatinous fluid, the consistency of paint. It is durable and elastic, and can be used as a primer or finishing coat on any metal surface, whether new or heavily rusted.

It can be used in three different ways: 1) as a rust preventative over unpainted or newly finished metal, 2) as a primer, with the advantage that the elimination of rust accumu-



Spray-Cromodizing installation in the plant of a prominent automobile manufacturer. This unit is used for rustproofing fenders and other sheet metal parts. Note how compact the unit is, and what little floor space is required. This installation handles more than 200 fenders per hour. Very few workmen are required.

ECONOMICAL COVERAGE

BY SPRAY OR DIP

UTILITY Lacquer Enamel is so concentrated that it takes nearly an equal quantity of thinner. And it is low priced to begin with.

Because of long flow, it dips without streaking on long and unusually shaped articles. Sprays without orange peel.

Covers solidly. Adheres to wood or steel. Send for chart of colors with "sales appeal."

Thinners That Cut Quickly

The line includes a thinner for every use. Each one is moderately priced. Mention requirements for quotation.

JAMES B. DAY & CO.

1872 CLYBOURN AVE.

CHICAGO

UTILITY

LACQUER ENAMEL

lation will give permanency to the overlying paint application, 3) for applying over rust with the elimination of sanding, scraping, sandblasting or otherwise removing the rust, making the rust absolutely inert and therefore not causing the paint application to peel, crack or raise. It can be brushed or sprayed on any metal surface the same as paint.

The coating is very elastic, a characteristic obtained from the inclusion of ingredients with a semi-drying action. It expands and contracts with the metal and practically becomes an integral part of the metal itself. It fills every crevice and pin hole and thoroughly seals the surface so that oxygen and its attending oxidation are entirely prevented from reaching the metal. It not only resists oxidation but also forms a barrier to acid and alkali fumes, salt-air, vapors and other agents of deterioration. It sets quickly and requires no further attention after applying.

Mogul 3-Way Coating is a product of The North American Fibre Products Co., Keith Bldg., Cleveland, O.

New Coatings Produce Impervious Films

Technical Coatings, Inc., 11 Park Place, New York, N. Y., is producing a line of new coatings which are asserted to be unlike any other available, in that the films formed are absolutely free from porosity and impervious to water and corrosive atmospheric gases.

These finishes are the result of prolonged research at a leading technical institute in which, it is stated, the first vehicle, or "base" to form a strictly impervious film was developed.

This vehicle is described as a combination of pure vegetable gums and heat-treated oils made in an original and unique manner. It contains no linseed oil or synthetic resins. It forms films which are strictly air-tight and water-tight, which are elastic and will not peel, chip, nor crack. For this reason they rank high in protective value and in preventing corrosion of metals. They are applicable also to wood and to other surfaces such as dry concrete and plaster. Resistance to salt and fresh water and to all degrees of humidity as well as to extremes of temperature is unusual.

Primers with the new non-porous base are available for various purposes. Metallic zinc is especially good on black and galvanized surfaces and where salt-water exposure is severe. A combination of zinc and aluminum is recommended for fresh-water and humid conditions, or where condensation occurs. A balanced red-lead, which is held in suspension permanently, is used as a primer for average conditions. Finishing coats in standard colors are also available, as is a high-gloss, acid-resistant gray. A vehicle for aluminum which requires 25% less aluminum powder than other vehicles, is also employed for finishing coats.

Application is by brush, spray or dipping, as preferred, after thinning with pure turpentine or high-grade mineral spirits. No linseed or other oil can be added, as this would defeat the purpose of the non-porous base. Drying time varies from 4 to 16 hours, depending upon drying conditions.

Auto Primer-Filler

The Finishes Division of the du Pont Co. has developed a new primer for automotive refinishing, to be known as "Preparakote." This, it is stated, not only forms an adhesive bond between the surface and the succeeding coat, but also serves as a filler. The division claims that it can be dry-sanded in four hours after application, with a saving of from one to two days' time in refinishing some automobiles.

BETTER FINISHES at BIG SAVINGS

with Paasche AIRRUBBING AND AIR-SANDING MACHINES

F707
Superior Airrubbing Machine
Showing two pad assembly

CUT your rubbing, polishing and sanding costs; spare your employees that fatiguing labor; secure finer finishes—with Paasche Airrubbing and Airsanding Machines. Easy to handle, well balanced, free from vibration, give years of uninterrupted service without breakdowns or repairs. For pumice slush, felt or sandpaper. Used by leading industrial manufacturers everywhere. Write for technical bulletin giving full details of savings possible with Paasche Airequipment.

Paasche Airbrush Co. 1917 DIVERSEY PARKWAY CHICAGO, ILL.

PRACTICAL AUTOMOTIVE LACQUERING

A Handbook on Finishes, as applied to every metal working industry.

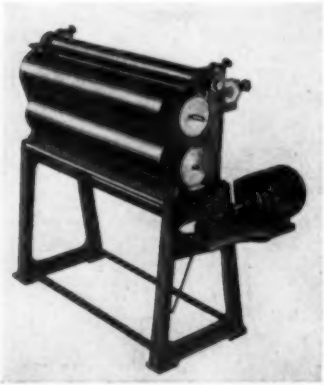
Contains 212 pages of intensely interesting and valuable information. Eighteen chapters covering every phase of lacquering, accompanied by many illustrations, color plates, charts, etc. Handsomely bound in Fabrikoid and is of convenient size—6¼ inches by 9¼ inches. Sold on positive "money-back" guarantee.

Price $3.50 . . *money refunded if book is not satisfactory.*

PRACTICAL PUBLICATIONS, INC.
222 East Ohio Street Indianapolis, Indiana

Roller Coating Machine

An improved, practical, and compact motor-driven machine for applying liquid finishing materials to sheet stock or strip stock by means of rollers, as in printing, is an-



Operates quietly, smoothly, economically.

nounced by the Naz-Dar Co., 4014 N. Rockwell St., Chicago, Ill. Adjustments are provided for regulating the flow, so as to put on a uniformly-spread, light, medium or heavy coat. The speed at which stock feeds through the machine is also adjustable to suit shop conditions and production requirements. This machine utilizes a simple principle whereby the lacquer or other coating material is carried from a reservoir onto a roller revolving therein and then over a train of rollers onto the sheet being coated.

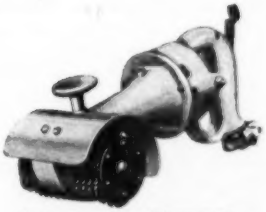
The speed and uniformity with which sheets or strips may be coated, and the minimum wastage of material, are among the chief merits of this method of applying priming coats or finishing coats. Practically the only waste is the little which occurs when the rollers are cleaned after a run.

Single coating or second or third coatings can be applied in either color or clear materials. For best results the materials used should be specially formulated for application by rollers.

The machine will usually coat any stock from very thin rigid or semi-rigid sheets up to material 1-in. in thickness and as wide as 44-in. It is entirely practical to coat metal or other material. All that is necessary is to provide suitable means for handling the material at the infeed and outfeed ends of the machine. It is the practice in many establishments to roller coat sheet metal stock and then cut it and form it into products afterward.

Cleans Off Old Paint, Rust and Scale

A portable mechanical tool with high speed rotary cutters for cutting off old paint, rust and scale is offered by the "Berg" Cleaning Tool Division of The Concrete Surfacing Machinery



The pneumatic driven tool.

Co., 4667 Spring Grove Ave., Cincinnati, Ohio. This machine carries a bundle of small-diameter, saw-tooth cutters on each side of adjustable guide plate or depth shoe which bears against the surface being worked on. The hardened steel cutters are projected by centrifugal action, and contact the surface with a shearing action. Both air-motored and electric-motored models are available.

Kemick is a black chemical paint that "stays put" on surfaces that get hot—even red hot—and prevents rust under these severe conditions. It does not burn off nor turn brown.

convince *yourself!*

We believe there are *many* products in our line, superior to *any* other on the market and would like to prove it to *you* at *our* expense. . . . Let us submit free working samples of a few *exceptional* items.

No. 1000 (licensed) GLOSS LACQUER.....(Heavy body—water white)
No. 2000 (licensed) FLAT LACQUER.....(Real rubbed satin finish)
No. 3500 SEALER.....(Quick drying—easy sanding)
No. 1900 WATEROIL RUBBING OIL.....(Eliminates haze or bloom)
WATEROIL STAINS.....(Acknowledged leader in stains)
DOLCO FILLERS.....(Quick drying, *real* fillers)
LIGHT-FAST SHADING STAINS.....(Eliminate fading, blend perfectly)

You will be amazed at the unusual merits of all these items.

V. J. DOLAN & COMPANY, Inc.
1830-32 NORTH LARAMIE AVENUE CHICAGO, ILL.

"Unquestionable Quality" *Wood Finishing Supplies*

INDUSTRIAL FINISHING

The Centrifugal Enameler in Daily Use

by Charles F. Moss
Enameling Superintendent

The first man to use the Filwhirl Enameler for commercial coating was superintendent of a large enameling concern in Providence, Rhode Island. He volunteered an article printed in the June issue of this paper—read what he said after three years of experience with this machine. We would hesitate to state the facts as plainly but we invite you to send samples of your product to us. We will coat them in the machine and return them for inspection with full information about the machine, the method and the cost.

THE LEON J. BARRETT CO., Worcester, Mass.

Will Wood Stand a Bake Finish?

We are eager to find out what safe maximum temperatures certain woods will stand during a short period of time while an enamel coating is being baked on the surface — say, for example, hardwood turnings for handles, or something of similar nature. For instance, could maple turnings stand a baking temperature of say 200°F. for one hour, or for ½ hour, without in the least harming the wood in reference to its utility strength and lasting durability?—C. L. T. Co.

It is an unusual practice to subject hardwood turnings, which have been coated with either japan or enamel coatings, to heat. However, I know of several instances where it is being done. The temperature is between 130° F. and 150°F. and for a period of 8 to 12 hours.

The effect of temperatures between 150°F. and 175°F., and upward, which are the temperatures I imagine will be necessary to "cure" the applied coating, will change the moisture content of the wood. By the same token, wood in contact with moisture (water) is also physically disturbed. Heat reduces the relative humidity of the air and causes a rapid evaporation of the moisture content present in the wood. Wood that has been coated (as with a wet film) and subjected to heat will present severe surface checking.

Japans or enamels, either oil or synthetic, require oxygen and/or heat to change the contour of the film. Synthetics require, as a general rule, elevated temperatures. This presents a dry wood which absorbs moisture, and, in its absorption expands to the fiber saturation point—and the addition of moisture which will naturally take place, is accompanied by a change in the size or volume of the wood. Wood also changes more when drying by shrinking in width on the flat grain face than in edge grain.—RAY C. MARTIN, Consultant on Finishing.

No one has accurate data on the exact differences between different species of wood with regard to their ability to resist high temperatures. It is well known, of course, that if wood is heated hot enough it will char quickly and that at lower temperatures, even as low as the boiling point of water, charring may occur if the heating is continued indefinitely.

On the other hand, we also know that in various processes of wood treatment or wood conversion, relatively high temperatures are used without impairing the ability of the wood to serve its purpose. For example, in the manufacture of furniture wood is very often steamed or boiled in water so that it will bend satisfactorily.

In veneer cutting, logs are heated in boiling water or in steam to soften them for cutting. In the wood-preserving industry, southern pine poles and piling are very commonly heated in steam at 20-

Questions « Answers

lbs. pressure (259°F.) for 6 to 12 hours as a preparatory step to injecting the creosote. It is known that these high temperatures do have some effect upon the wood, but it is also known through long years of experience that they do not prevent the wood from giving satisfactory service.

I do not believe that a temperature of 200°F. for one hour or less will have any noticeable deleterious effect upon the serviceability of maple turnings, unless the loss in moisture due to the heating should result in some checking of the turnings. This is a damage that would be evident at once, and is not something that could seem all right in the beginning but cause trouble later after the finished article is in service. If the humidity of the air surrounding the wood in the oven is at approximately the right point, and if the wood is thoroughly dry before placing it in the oven, there should be no further change in moisture content and therefore little likelihood of checking.

One difficulty that may be encountered in baking finishes on wood at high temperatures is the expansion of the air in the wood causing bubbles and pin holes in the coatings. I believe, however, that there is already enough experience in finishing wood with baked finishes, to show that the process is not impractical.—GEO. M. HUNT, In Charge, Section of Wood Preservation, Forest Products Laboratory, Madison, Wisc.

Furniture Refinishing

The October issue of INDUSTRIAL FINISHING holds a special interest for me, as you have my letter of July 3rd printed in it. On page 44 you have quoted me wrong in reference to lacquer. I said when patching with lacquer, it was a longer job than with amber glaze or amalgamater.

I should have told you in my letter that my work is done gratis to our customers, so you see if this concern was to sand and varnish all table and buffet tops, they would have to employ 50 finishers all the year round.

I am sure Mr. Nall (whose answer followed my question) is right in saying that patching lacquer surfaces can only be done by spraying, but you cannot be going in every home and moving their furniture down to the basement or outside to spray it, as only one man is sent out to the job—and weather conditions have to be considered also.

I also find that when using any of the rubbing products, it is a much quicker way than Mr. Nall's method of using the alcohol rag. Two days ago I had a very interesting talk on this subject with the representative of a manufacturer of finishers' repair special-

ties, and his answer was that none of these patching products was made to do any large surfaces, such as table or buffet tops. His suggestion was to sand and varnish the tops only when it was necessary.

I wish to thank T. R. Nall and E. W. B. for their suggestions, and I hope to hear more on this subject.—W. G. D.

Blast-Clean Drums Before Refinishing

Have read with much interest an article in the October issue of INDUSTRIAL FINISHING, by Mr. Albert F. Byers of Benjamin Franklin Paint & Varnish Co. All that Mr. Byers says is true, but we would like to add a few comments on another process that is ideally suited to the preparation of steel drums for refinishing.

While we thoroughly agree with Mr. Byers in that every container is a traveling advertisement for the concern shipping it, nevertheless, we believe the tendency is to use the drums as long as they look reasonably respectable, painting a new coating on the drum possibly several times without any real attempt to remove old paint, rust, etc.

As the drums are handled in the various operations intervening between the time they are shipped and the time they are received back by the shipper, spots of paint or enamel will have been knocked off, so that when we come finally to the point of cleaning off old paint and foreign matter, we find that the coating is not uniform. In addition to this, there will be many places that have already begun to rust, and unless the cleaning process used is of sufficient strength to attack the rust, as well as other objectionable items, the final paint job cannot be expected to be anywhere near 100% satisfactory.

The most effective and satisfactory method, so far, is to blast-clean these old drums, and by the way, this process could be used with equal advantage in preparing new drums for painting or enameling.

The blasting operation, which consists of the spraying of fine sand or steel particles under pressure against the surface of the drum, tends to remove all foreign matter, whether it be in the form of paint, enamel, oxidization, etc., exposing the virgin metal even in the most intricate corners and crevices. In addition to this thorough cleaning that the blasting action provides, there is obtained a fine uniformly matte finish, the countless depressions of which permit of a closer bond between the metal and any applied finish. As positively all foreign matter

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PERFECT ADHESION AND FLEXIBILITY

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Air dries in a few minutes so finishing coat can be applied. Force dry or bake if you wish.

Send us your inquiry. Let us solve this vexing problem for you.

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Manufacturers of Enamels, Varnishes, Japans, Lacquers.

SILK SCREEN METHODS of REPRODUCTION

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THIS new book is intended for Sign Painters, Card Writers, Display Men, Furniture Manufacturers, Novelty Manufacturers, Glass Etchers and For Domestic Use.

Every detail of the silk screen process is presented clearly in detail. All equipment is fully described and its use illustrated. All materials needed in the various kinds of silk screen work are mentioned with respect to their use to advantage. Estimates of costs and prices to charge are given.

Practical Publications, Inc.
222 East Ohio Street Indianapolis, Ind.

has been removed, the new paint job is smooth and will stand up much better under hard usage.

The blasting operation can be performed manually or, where there is a sufficient volume of compressed air available, it can be entirely automatic.

That blast-cleaning is the most effective and satisfactory means of cleaning metals preparatory to repainting is surely proved by the large number of concerns who are using this equipment for the cleaning of a wide range of items, such as structural steel bridges, reservoirs, water towers, gas holders, railway cars, pipe, etc. . . . We will be glad to answer any questions that may be asked on this subject — PANGBORN CORPORATION.

Lanolin in Paints; Varnishes?

An old idea has been resurrected in England—the suggestion of adding Lanolin to paints and varnishes to improve elasticity. The idea sounds good if one could get some idea as to what percentage to use. . . . on oil or oil and gum content. On the face of things, it would seem to retard drying—perhaps dull the gloss. Can anyone give us a lead on experience in the use of lanolin?—VICTOR ONWARD, SUSSEX, ENGLAND.

Lanolin is used in various formulations of finishing materials for the purpose of giving products a sleek, mar-proof and scratch-proof surface. The steel furniture industry uses lacquers which contain, not Lanolin, but various types of waxes for the same purpose. Similarly, the best furniture lacquers contain waxes for mar-proofness and also because the sanding operation becomes considerably easier.

Mr. Onward is not correct in his assumption that it gives improved elasticity to the product, but it does give that feature of mar-proofness to a product. Unless to him, elasticity and the mar-proofness or the sleekness of the surface are synonymous.

Lanolin has been used and can be used as a substitute for various hard waxes now used by the industry.—KAM N. KATHJU.

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With this Lamp a powerful white light is thrown into every corner and crevice of the container. An accurate and safe method for determining cleanliness before filling, checking contents, or making sure "empties" are empty.

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Refinishing Trouble

Some time ago there was a question in INDUSTRIAL FINISHING about refinishing pool tables. After reading the procedure used, I am inclined to believe the trouble came from not washing off the lye solution (finish remover) thoroughly. After a good rinsing with clear water, the surfaces should be washed with vinegar or a borac acid solution to remove surplus

lye. Then they should be allowed to dry thoroughly before any refinishing work is started.

It is better to use a good grade of varnish remover, as it is cheaper in the end. I would not advise making this yourself, as it is better to buy it ready for use—or there are several brands of remover in powder form which you can mix with very hot water. After using remover it is always better to wash with turpentine rather than alcohol, as turpentine removes the surplus wax much better. Also, when adding lacquer to your shellac you may run into trouble if there is any surplus wax left on your work, as any wax that is left in a corner, or any place else, will cause a spot, or will not dry.—J. K. COOPER.

Lacquer Peeling

In reply to a letter in September issue of INDUSTRIAL FINISHING, by the J. Chair and Furniture Co., ("Maple Finish," page 6) I should judge their lacquer peeling is caused by using an oil pigment stain. They do not say just how or where their lacquer is peeling—whether it is on flat surfaces or on the beads and corners. I suggest that they try some other kind of stain and see what the results are. Perhaps you haven't given your stain enough drying time before applying lacquer. You don't state whether you are using a sealer before lacquering; if not, try a good sealer and see what the results are.—J. K. COOPER.

Electric Air Heater Book

The Electric Air Heater Co., Division of American Foundry Co., Mishawaka, Ind., has just issued a comprehensive data book on heating comparisons. This 24-page Data Book No. 236, illustrates and describes space heating by Electromode forced heat, gives cost comparisons with other methods of heating, illustrates applications of Electromode industrial, portable and "Bilt-in-Wall" all-electric, fan-type, unit heaters.

Detailed information on heating costs, with all types of heating methods compared is an important feature of this book. These are unbiased, based upon installation records.

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HARDWOOD FINISHING SPECIALTIES SINCE 1888

Letters from Readers of "Industrial Finishing"

The names and addresses of firms or individuals whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor.

Can Supply Flock

In the August issue of INDUSTRIAL FINISHING we note an inquiry relative to flock-backed mirrors. Will you kindly give us the name of the company interested in this material so we may get in touch with them? —Claremont Waste Mfg. Co.

Striping Tools

In the October number of your publication, we note several inquiries for information about striping tools. . . . We are also interested in striping devices. Can you give us the names of manufacturers or put us in touch with them? — S. A. V. Co. (Reed, Rattan, Willow Furniture).

Shading With Stains

I have read a fine article on finishing golf club heads in your October issue and would like to get this issue so that I can file it away for reference.

I wonder if you can give me the address of the Grady Mfg. Co., who have a process for hardening soft wood? I would like to try this experiment with golf clubs.

I also would like to know where I can get some information regarding shading with stains. This is my term for staining, where you blend stains and make some parts light and other parts dark, such as you see on violins, guitars and other musical instruments. I would like to transplant a shaded finish to a golf club head. . . .—F. G. (Golf Pro.).

Lettering Shoe Horns

From time to time we are asked for small metal parts such as shoe horns, which are lettered with the purchaser's name and address; some customers ask for these with a color in the type. We have tried various methods of doing this but with only partial success, and should be glad if you would give us any information you have on this work.—S. M. Mfg. Co. (Specialties).

Playing Card Lacquer

I would like very much to secure a sample quantity of lacquer to coat playing cards, as per your write-up about "Lacquered Labels" in October issue of INDUSTRIAL FINISHING, page 11.—A. M.

Air Drying Enamel

In the August issue of INDUSTRIAL FINISHING, on page 4, N. O. H. asks for information concerning an air-drying enamel. We are interested in receiving the same information, and will appreciate your sending us the name of the manufacturer if you have it.—D. T. Co. (Name Plates).

Metal Cleaner

Referring to the article, "Finishing Steel Bodies of Commercial Cars," in October issue of INDUSTRIAL FINISHING, will you please send us the name of the most satisfactory commercial cleaner used in cleaning the

surface of terne plate, where it has an oil finish, or where the surface is dirty from other causes? We would prefer a cleaner that we could make up in our own place rather than buying a commercial one. Among the articles we have to clean before painting are fire-extinguisher containers painted by air-brush with a red lacquer paint, air dried after the surface is cleaned. — L. O. L. Co. (Fire Fighting Equipment).

Porcelain Finish Repair

In your August edition of INDUSTRIAL FINISHING, we note an article on page 54 regarding porcelain finish repair. Will you kindly send us literature on the repairing of porcelain finish, or advise us where we can obtain some information as mentioned in this article?—M. N. Co. (Metal Products).

Wood Graining on Metal

We noticed an inquiry under the above title in October issue, page 52. We are also interested in this same work and would appreciate receiving any information along this line. We might add that we would rather do our graining by means of stencils or transfers, as production is essential. Most any of the hardwood grains are suitable to our needs.—R. B. Co. (Casket Mfr.).

Putty; Filler

In October issue of INDUSTRIAL FINISHING in the letters from Readers, there was a formula for Swedish putty or filler. Here is another mixture for this putty: As a base, use a lead paint or a glossy paint, and then add 1) a bit of whiting, and then add 2) a small amount of glue that has been dissolved in hot water, 3) a little dry color, and in some cases 4) dry China clay or paper hanger's paste. The amount of each ingredient to add depends on the working qualities desired of this putty, and how hard it is to dry, and how fast.—J. K. COOPER.

Cane Shavings Found

We thank you for the cooperation you have given us in finding a source of supply for cane shavings. We have contacted the Grand Rapids Furniture Co. and have given them an order for this material. We were greatly surprised at the interest

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● Produces a beautiful lustrous finish with excellent adhesion and good coverage in one coat. Can be polished or buffed to obtain a higher lustre.

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Chart showing full line of colors or a finished sample will be sent on request.

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MAGIC TACK RAGS remove specks, lint and sand particles--- bring out that deep, smooth luster, produce a faultless surface for white or colored finish. Why use "home made" tack rags when you can buy MAGIC TACK RAGS at trifling cost! They are tackier, do not dry--- are dust-proof and spontaneous combustion proof. Packed in dozen and gross lots or more. Made only by the

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If your dealer does not carry Magic Tack Rags, write us for sample.

MARVELOUS NEW PAINT SPRAY GUN

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Write for Catalog.

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shown this inquiry (published in Sept. issue, page 51) and wish to thank you again for the splendid service.—C. E. T. (Novelty, Juvenile and Outdoor Furniture).

Rubbing Machines

Would you please give us the names of manufacturers of both air-driven and motor-driven machines for rubbing table tops? Also, let us know where we might buy some used equipment of this type, if you happen to know.—S. Varnish Co.

Portable Spray Outfit

We read with much interest the answer of T. R. Nall to a question on furniture refinishing by W. G. D. in October issue, pages 44 and 46. You mention a portable spray outfit. For some time we have been trying to locate a practical one suitable for our outside man. Probably you can tell us of one that you know to be good.—E. & G. Co. (Furniture).

Portable Rubbing Machine

We have been trying to locate a small electric portable rubbing machine. We have been informed that there is a small rubbing machine manufactured, which is portable and can be carried around. If you know the manufacturer of a machine of this nature, we would appreciate your giving us the name and address.—G. D. R. Mfg. Co. (Bank, Store and Office Fixtures).

Etching Glass

We are in need of information relative to the deep etching of glass. Could you tell us where it might be obtained, or whether any articles on this subject have ever appeared in your magazine?—C. O. Mfg. Co. (Advertising Specialties).

Waste Spray Collection

We have a customer who has expressed considerable interest in an article entitled, "Waste Spray Collection," which appeared in the November 1934 issue of INDUSTRIAL FINISHING. Knowing that our customer was faced with a similar problem, we forwarded a copy of this article

to him. The location of this installation is not mentioned in the article, however, and we are wondering if you can give us this information, so that we may make an effort to obtain permission for a representative of our customer to visit and inspect it?—C. O. M. & Co. (Finish Mfr.).

Striping Tool Wanted

We have a problem of striping now being done by hand at an excessive cost, and we would like to replace this by a quicker method. We thought you might be in a position to tell us who makes the proper equipment for putting on such a stripe. We have tried a device made for this identical application, but have found it unsatisfactory. Could you give us a list of manufacturers supplying such equipment?—H. & C.

Bleaching Process

The purpose of this note is to assure you that we enjoy reading your magazine very much, and have derived much benefit from the information contained therein from month to month.

Your October number, page 49, contains a letter from one T. H. M. Co. relative to a bleaching process. This would be of interest and value to us. The purpose of this letter is to ask that you kindly give us the name and address of the firm so that we may write to them.—G. A. Co. (Brush Handles).

Casket Handle Finish; Flock-Backed Mirrors

We refer to your August issue and should appreciate if you will kindly advise us the reply you will receive to the questions asked by the "R. Casket Co." and the "T. Mirror Works"—see page 4 of your August copy, as we have clients interested in these two questions. — Harvie, Cooke & Co., Ltd., 659 Sxechuen Road, Shanghai, China.

Treating Galvanized Sheets for Painting

A few months ago there was an article in INDUSTRIAL FINISHING magazine in regard to some firm having perfected a preparation for treating galvanized sheets before painting or enameling. We would like very much to get in touch with this concern, as

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RESPIRATOR NO. 10

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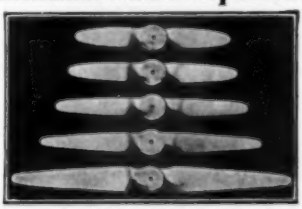

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Highly-flexible paper masking tape with precision edges for easy, accurate color separation. Weather and lacquer resistant.

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Duplicates these qualities in a fine-woven cloth tape.

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Differs from Jonflex only in that its cloth backing is heavier, stronger, coarser in texture.

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YOUR FINISH
Sealed against the elements!
Crystal Clear
Hard and Enduring
Perfect and Lasting Color
Stops Spotting Out

THE STANLEY CHEMICAL COMPANY
East Berlin, Conn.
Lacquers—Synthetics—Enamels—Japans
A subsidiary of
The Stanley Works, New Britain, Conn.

we would like to give this preparation a trial.—J. Mfg. Co. (Modern Poultry Equipment).

Bleaching Material

I notice in May 1934 issue, on page 49, an article entitled "Bleaches Dark Woods to Bone Whiteness." It's about a patented process and material of which I would like to have a sample for experimental work. If successful I could use a large quantity of the material. I would appreciate any information you could give me in this matter.—W. D.

Cleaning Job Saved

In September issue of INDUSTRIAL FINISHING, page 54, we noticed an editorial on "Cleaning Job Saved on Pressed Metal Finishing," and that names of suppliers of this material could be secured upon request. We are very much interested in this item and would be pleased to have the different manufacturers' names. —G. T. Mfg. Co. (Steel-Klad Products).

Transparent Mirrors

The writer recalls that you furnished, in one of your editions within the last year or so, the name of a Rockford, Ill., supplier of a type of glass which permits one way visibility. We would like to correspond with the makers or suppliers of the glass referred to, which acts similar to a mirror from one side but has usual transparency from the other side. Would you advise us of the names and addresses of producers or suppliers of glass of the kind referred to, or other similar types?—B. N. Co. (Metal Work).

EDITOR'S NOTE: The Rockford Plate Glass & Window Co., and the National Mirror Works, both of Rockford, Ill., can supply the kind of glass described.

How Would You Coat These Pieces?

We are manufacturers of office furniture, and for many years we have followed the general practice of finishing our desks both inside and out with clear varnishes and lacquers, resulting in natural wood tones. Recently we decided to adopt a new practice of using color in the

drawer interiors (at least the bottoms, partitions, pencil trays, and other inserted units). The result at this time has been to somewhat increase the cost, which is obviously not a satisfactory manufacturing practice. We believe that all manufacturers should tend to produce better results at lower costs. We feel that the only way we can accomplish lower costs and better products would be by saving in material and time in finishing the colored portions of the desks, and that dipping the materials in question is the answer to the cost problem.

Can you suggest a method whereby material such as fir and spruce, single and 3-ply pieces 3/16x3x11, 13 & 15-in., and 3/16x4x11, 13 & 15-in. could be satisfactorily coated with an opaque cheap coating, preferably a quick-drying lacquer or color varnish? The resulting unit must show no finger or rack marks, must be smoothly and completely coated to obscure grain lines, and should preferably be accomplished in one coat. —N. W. F. Co.

Metallic Lacquer on Several Cars at London Motor Show

At the 29th International Motor Exhibition, held last month in London, England, an important development in the finishes was an increase in what is known as metallic lacquer—a cellulose finish into which has been incorporated a percentage of fine aluminum powder, making possible beautiful, new effects. Twice as many cars were finished in this material as last year. The trend in these metallic finishes is chiefly to blue and green shades.

Standard models continue conservative and generally somber in tone, but lighter colors are used on semi-sports types. There is a trend also to plain colors, mainly gray, blue, and buffs, with a few greens and reds. A new trend is the use of mouldings in the same color as the body. Chromium mouldings are observed on some of the more expensive cars. Nearly all fenders and wheels are finished the same as body colors, darker shades having wheels and fenders black.

Wheels are mostly wire on English cars. In upholstery, leather and lacquered fabrics predominate, except in the coachbuilders' section, where about the same amount of fabric is used as last year. Streamlining has gained some ground, but in general the cars are conservative. —Duco Color Advisory Service.

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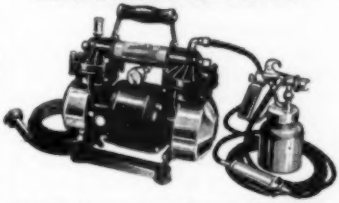

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EDITORIAL

Colors Identify Company Products and Properties

Woolworth store fronts look alike; American Railway Express trucks can be recognized at a glance; Royal Scarlet food packages are all unmistakable members of the same family.

These family resemblances by color are, it is declared by many authorities on industrial design, the beginning of an important trend in industry which may be called "coordinated appearance." The effect is achieved partly by design of form, as in automobile radiators, but mostly by a distinctive color scheme, as in Standard Oil filling stations.

The A & P stores, Sears, Roebuck, Eastman Kodak, and others are tending to coordinate the appearance of their products and properties for instant recognition by the public. The pattern and color of a company's products and equipment, in most cases, should be as distinctive and unmistakable as the striped barber pole or a Western Union telegram.

Experienced food shoppers instantly recognize Campbell soup cans without reading any words; they recognize the Campbell soup advertising because it usually bears a similar resemblance to the containers. Suppose the Campbell Soup Co. had its trucks, shipping cases, freight cars, factory buildings and letterheads all done in that white and red color scheme. That would be an example of complete coordinate appearance, which most of the leading designers and many industrialists believe is coming in the near future. Although no company has yet gone the whole way with cordinated appearance, several of the most aggressive firms are already well started.

Certain manufacturers of paints and finishing materials are in active sympathy with appearance coordination where it is practical, on account of its proved value as a sales help and as an economy resulting from standardization in finishing. One company recently issued a brochure, reprinted in color from MODERN PACKAGING, in which they show all the properties, equipment and packaging of a hypothetical food company committed to the coordinated appearance plan. The brochure points out the merits of the unified color scheme.

Finishing firms and factory fin-

ishing departments may soon be called upon to cooperate in more extensive coordinated appearance schemes which will apply to equipment, products, packaging, trucks and cars, advertising, stationery, etc. This will bring up some practical problems in the way of making identical colors perform satisfactorily in different vehicles and on different kinds of surfaces subjected to varying service requirements inside and outside. And it will definitely require a coordinated program administered under a singue authority.

Better Light After Painting

What difference, if any, does painting a factory interior make in the available daylight? A manufacturer of stoves and ranges recently made some studies on this subject, using a variety of structural and ceiling-type buildings and plotting levels of illumination throughout the plant with a sight meter. The resulting light curves showed remarkable improvement in the illumination where monitor and other skylighted types were painted white to reflect all the available daylight and artificial light down over the working plane.

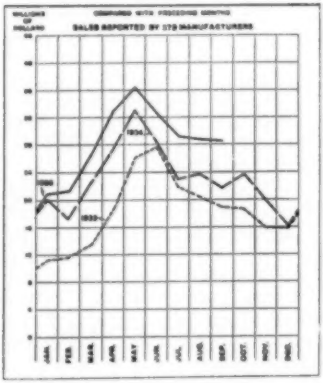
In a 40-ft. bay, painting more than doubled the working light. There were no windows along one side of the building and the monitor sash was less than normal height. Nevertheless painting brought the light up to 4 foot-candles at 5:00 P. M., compared with 1½ foot-candles at 4:00 P. M. before painting.

To the plant operator a survey of this sort is significant in that it demonstrates how, by utilizing the reflection values of paint, a shop floor may be given a greater and more evenly distributed flood of daylight or artificial light, making it more useful for exacting production such as finishing. According to studies on paint reflection values made in the research laboratories of a nationally known paint manufacturer, white has a reflection value of from 84% to 89%, cream 77%, buff 63%, light green 52%, gray 46%, brown 16%, and black only 2%. On ceilings and walls these reflection values may make the difference between a poorly lighted and a well lighted interior.

Naturally employes need all the light possible to perform their work efficiently and safely, and without the handicap of eye-strain and nervous fatigue. An abundance of well diffused light on an object makes it easier to see and has the effect of magnifying it. Moving objects appear more clearly, thus increasing safety and accuracy. In the production line these are important considerations.—Better Vision Institute.

Paint, Varnish and Lacquer Sales Show Heavy Increase

The accompanying chart shows how the total sales of paint, varnish and lacquer during 1935 (up to September 15) have far sur-



passed those of 1934, which in turn were greater than those of 1933. The figures on which this chart is based include industrial sales, trade sales and unclassified sales. The level-off from July 15 to September 15 shows the point of greatest gain over sales for the corresponding months of last year.

1936 Automobile Colors, Finishes and Decorations

Motor car colors for 1936 will be brighter than ever before. One over-all color remains the choice of the majority of manufacturers since this is more effective for streamlined designs, and it provides a setting for wheel areas and striping in brilliant accent colors. Such a setting is provided by a light creamy grey body color for flame-colored wheels. A light metallic blue is an excellent foil for vermilion striping.

Nearly every manufacturer is showing at least one car in metallic lacquer. Gunmetal shades in this material, particularly certain shades of grey, should find favor with the public at the shows. This color has infinite eye-appeal and can be placed under bad lighting or by any other color without losing its beauty. The jewel-like finish catches every ray of light.

A number of purplish blues, bright enough to retain their identity and still be conservatively dark in shade, are shown. One manufacturer cleverly emphasizes this characteristic of his offering in dark blue by striping in a dark maroon-red.

Grey is featured this year, ranging from neutral shades to slightly creamy tones and greenish greys. Very dark shades are also shown. Bright blue, green, red and orange striping and wheel colors are used to accent these to effectively off-set the charge that grey is a "hearse" color.

Green is to be found in one or two variations on every model, and this year finds little shown that is not pure green, free from yellow and blue tones, whether the shade is dark or bright or somewhat greyed.

Maroon and brown remain least popular.

Beige and tan will represent the brown color family—the offerings vary from yellowish to reddish. An unusual color scheme is reddish tan striped with dark red.

Interiors are luxurious. Hardware has been designed in keeping with the trend to streamlining. Instrument panels and window mouldings match in such excellent simulations of fine woods

that one taps them to be sure they are metal. Instruments are set into the board symmetrically, yet in such a way that they may be seen with ease by the driver. Most of the upholstery is taupe colored.

Almost all wheels are solid disc or sunburst type. One very handsome wheel is solid chromium rippling from nameplate to rim. Another attractive wheel is one, colored, with large chrome hub cap. A sunburst type has a modernistic chrome hub-cap containing the name of the car, and is painted the same color as the body with the sunburst outlined in the striping color.

Chromium is used lavishly both inside and outside the cars. Outside mouldings are sometimes two inches wide, and some cars have mouldings this wide both on the body and along the running board. Much chrome is used on louvres. —DUCO COLOR ADVISORY SERVICE.

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Be a "Big Man" yourself. You can if you will.

This editorial, written by Earl C. Statler, Chicago Manager of the United States Bronze Powder Works, Inc., is reprinted from Sept. issue of THE SAMPLE CASE.

Binks Moves New York Office

Binks Mfg. Co. (Spray Equipment) announces that its New York office has recently been moved from 106 to 126-30 Lafayette St.

Wolverine Finishing Materials Moves; Doubles Capacity

The Wolverine Finishing Materials Co. of Grand Rapids, Mich., announces removal of its establishment from 223 Erie St. to new quarters at 836-50 Chicago Drive. Production capacity at the new location is double what it was at the former address.

Marietta P. & C. Co. Modernizes Plants; Promotes Men

To properly take care of its rapidly expanding business, The Marietta Paint & Color Co., has completed plans for quite an extensive plant modernization program, both at the Marietta and High Point factories.

At the Marietta plant a new type of grinding equipment has been ordered, which machinery will largely increase the company's manufacturing capacity. The varnish plant, which during 1935 has been taxed to the limit, is to be modernized. These improvements will speed up production and improve capacity.

At the High Point, N. C., plant, an extensive program of modernization is also being carried out.

G. A. LaVallee, President of the company, stated that sales for 1935 would exceed those of 1929.

Mr. H. A. Derr, who for a number of years has been manager of the Marietta plant, has been made Technical Director of the company and assistant to the President. Mr. C. S. Beaver, of Dunellen, N. J., has been appointed General Manager of Production at the Marietta and High Point factories. Mr. Beaver is well known in the trade as a production engineer and brings to Marietta a broad experience.

Mr. John A. Kolesa, for a number of years Manager of Industrial Sales at the Marietta plant and widely known in the industrial field, has been appointed Industrial Sales Manager of the company.

V. J. Dolan Plant Going OK After Neighbor's Explosion

Mr. V. J. Dolan, President of V. J. Dolan & Co., Inc., 1830 N. Laramie St., Chicago, Ill., advises that notwithstanding the fact that a terrific explosion in a factory across the street on October 7 almost wrecked his new building (rebuilt after being destroyed by fire in August, 1933), his plant is being rapidly rebuilt, and orders for finishing materials are being received, filled and shipped as usual.

Paint Can Shaker

A small compact motor-driven outfit for violently shaking and agitating the pigment-settled contents of long-standing paint cans is now included in the line of finishers' supplies offered by The Ridgely Trimmer Co., Springfield, Ohio. Other finishing materials in small containers can also be agitated.

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Advertisements under this heading 45 cents a line per insertion, minimum charge, $1.35. In estimating, calculate six words to one line, and add one additional line for heading. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

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